

CURRICULUM VITAE

Prof. Xun-Li WANG (王循理)

B.S. – Peking University

Ph.D. – Iowa State University



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Professor Xun-Li Wang received a B.S. in Physics from Peking University in 1985, and went to the United States through the CUSPEA program, earning a Ph.D. from Iowa State University. He had worked at Oak Ridge National Laboratory for 20 years before joining City University of Hong Kong in 2012, where he served as [Founding Head of the Department of Physics](#) and Executive Director of the Hong Kong Institute for Advanced Study, among other positions. In the fall of 2024, he was appointed a Visiting Professor at Harvard University.

Prof. Wang conducts research at the interface of condensed matter physics and materials science, using advanced neutron and synchrotron X-ray scattering techniques. He is known for works on (1) structure and dynamics of metallic glass; (2) phase stability and deformation behavior of high entropy alloys; (3) neutron scattering instrumentation and novel applications.

Prof. Wang is a Fellow of the American Physical Society (APS), the American Association for the Advancement of Science (AAAS), and the Neutron Scattering Society of America (NSSA). He served as [Chair of the inaugural Gordon Research Conference on Neutron Scattering](#). In 2020, he received a Croucher Senior Research Fellowship in Hong Kong. In 2024, he was elected to serve on the Board of Directors of the American Physical Society.

HONORS AND AWARDS

- 2023 [Outstanding Scientific Research Award](#), Ministry of Education, China
- 2022 [The President's Award](#), City University of Hong Kong
- 2021 [Croucher Senior Research Fellowship](#), Croucher Foundation
- 2020 [Elected Fellow](#), Neutron Scattering Society of America (NSSA)
- 2018 [Lee Hsun Lectureship](#), Chinese Academy of Sciences
- 2017 [Elected Fellow](#), American Association for the Advancement of Science (AAAS) (Section on Physics).
- 2010 [Elected Fellow, American Physical Society \(APS\)](#)
- 2009 [Changjiang Scholar](#), Chinese Ministry of Education
- 2006 [Outstanding Oversea Young Scientist Award](#), National Natural Science Foundation of China
- 1999 [A. F. Davis Silver Medal](#), American Welding Society

1985 [CUSPEA](#) (China-U.S. Physics Examination and Application, aka TD Lee Program) **Scholar**, Chinese Ministry of Education

EMPLOYMENT HISTORY

City University of Hong Kong, Hong Kong (2012 – present)

2022-2023 **Executive Director**, Hong Kong Institute for Advanced Study
2017-2023 **Chair Professor and Founding Head**, Department of Physics
2012-2017 **Chair Professor and Head**, Department of Physics & Materials Science

Oak Ridge National Laboratory, USA (1992 – 2012)

2009-2012 **Distinguished Research Staff**
2006-2011 **Group Leader**, Powder Diffraction Group, Neutron Scattering Science Division
2004-2006 **Senior Research Staff**, Experimental Facilities Division, Spallation Neutron Source
1999-2011 **Instrument Scientist and Project Manager for VULCAN**, Spallation Neutron Source
1994-1999 **Research Staff Member**, Metals and Ceramics Division
1992-1994 **Postdoctoral Fellow**, Metals and Ceramics Division

OTHER POSITIONS HELD

2024-2025 **Visiting Scholar**, Harvard University
2024-present [Member, Board of Directors, American Physical Society](#)
2023-present **International Councilor**, American Physical Society
2019-2023 **President**, Physical Society of Hong Kong
2015-2018 **Guest Professor**, Institute of High Energy Physics, Chinese Academy of Sciences
2011 **Guest Scientist**, National Institute for Materials Science (NIMS), Japan

EDITORIAL APPOINTMENTS

2021– present [Editor, *Acta Materialia and Scripta Materialia*](#).

MAJOR CONFERENCES ORGANIZED

- Initiator of the APS Satellite Meeting in Hong Kong, 2024, 2025, 2026.
- Co-Chair, [Gordon Research Conference on Structure Nanomaterials](#), Les Diablerets, Switzerland, May 12-17, 2024
- Co-Chair, HK Tech Forum, [Quantum Physics and Complex Systems](#), Hong Kong, December 7-9, 2022 ([report in Nature](#)).
- Co-Chair, QENS-WINS2018, The 13th International Conference on Quasielastic Neutron Scattering, and the 8th Workshop on Inelastic Neutron Scattering, July 15-20, 2018, Hong Kong
- Inaugural Chair, [Gordon Research Conference on Neutron Scattering](#), Hong Kong, June 21-26, 2015
- Director, Croucher Summer Course on Neutron Scattering, Hong Kong, 2014, 2016, 2018, 2023, 2025

SELECTED INVITED TALKS

1. Seminar Speaker, [Center for Soft and Living Matter, Department of Physics and Astronomy, University of Pennsylvania](#), November 11, 2024
Title: Medium-range order and local structure fluctuations in metallic glass
See also [Penn Engineering Events](#)
2. Colloquia Speaker, Department of Physics and Astronomy, Texas A&M University, October 31, 2024
3. Instructor, [Peking University Summer School International on Fundamental Physics](#), Peking University, “Introduction to Scattering Science,” August 1-9, 2024
4. Seminar Speaker, Tsinghua University, July 31, 2024
5. [Colloquia Speaker, Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard University, October 20, 2023](#)
Title: Low-Temperature Deformation in High-Entropy Alloys
6. Distinguished Colloquium, School of Physics, Peking University, [“Structure and Dynamics of Metallic Glass - Atomistic Insights from Scattering Experiments,”](#) October 14, 2023
(Special colloquium celebrating the 110th Anniversary of Physics at Peking University)
7. Plenary Speaker, [The 18th International Conference on Liquid and Amorphous Metals](#), Hiroshima, Japan, September 4-9 (2022)
Title: Medium-range Order and Cluster Connectivity
8. Plenary Speaker, 2019 Asia Oceania Conference on Neutron Scattering, Kenting, Taiwan, 2019
9. The President’s Lecture Series: Excellence in Academia, City University of Hong Kong, 2019
Title: Raising the Bar - The Application and Social and Economic Impact of Neutron Scattering
10. [Lee Hsun Lecture, Chinese Academy of Sciences, 2018](#)
11. Gordon Research Conference on Neutron Scattering, Hong Kong, 2017
12. International Conference on Neutron Scattering, Daejeon, Korea, 2017
13. Symposium Speaker, [Armourers & Brasiers' Cambridge Forum, University of Cambridge, UK, June 20, 2017](#)
Title: Application of Neutron Scattering to Materials Science and Engineering
14. Seminar at Department of Physics, University of California, San Diego, USA, 2017
15. Material Research Society Fall Meeting, Boston, USA, 2016
16. Material Research Society Fall Meeting, Boston, USA, 2015
17. [Gordon Research Conference on Structural Nanomaterials, Hong Kong, 2014](#)
18. Seminar at the Department of Chemistry, University of Sydney, Australia, 2014
19. Plenary Lecture, The 16th Hong Kong Physical Society Annual Meeting, Hong Kong, 2013
20. Seminar at School of Physics, Peking University, China, 2013
21. Knowledge Innovation Forum, Institute of High Energy Physics, Chinese Academy of Sciences, China, 2013
22. Colloquium at Department of Physics, Fudan University, China, 2013
Title: Crystallization pathways in bulk metallic glasses
23. Distinguished Lecture at the 17th Annual Conference of Hong Kong Society for Theoretical and Applied Mechanics, Hong Kong, 2013
24. Materials Research Society Fall Meeting, Boston, USA, 2012
25. Seminar at Department of Nuclear Engineering, MIT, USA, 2012
26. Seminar at School of Engineering and Applied Sciences, Harvard University, USA, 2012
27. Seminar at Faculty of Engineering, “Application of neutron scattering to engineering problems,” Dalhousie University, Nova Scotia, Canada, March 30,
28. Seminar at the ISIS Facilities, Rutherford Appleton Laboratory, UK, 2011
29. [The 44th Erice Crystallographic Course, entitled “The Power of Powder Diffraction”, Erice, Sicily, Italy, 2011](#)
30. HANARO 15th Anniversary Celebration Symposium 2010, Daejeon, Korea, 2010
31. Colloquium at Department of Physics, University of North Carolina at Chapel Hill, 2010
32. GE Global Research, Niskayuna, New York USA, 2010

33. Institute of Metal Research, Tohoku University, Japan, 2009
34. US DOE-BES workshop “Characterizing Materials Damage in Four Dimensions,” 2009
35. The International Conference on Neutron Scattering, Knoxville, USA, 2009
36. The 137th Lecture of Zhong Guan Chun Forum (中关村论坛), Institute of Physics, Chinese Academy of Science, China, 2008
Title: The Structure of Metallic Glasses – Atomic Clusters, Space Filling, and Water Cube
37. US DOE/BES Mechanical Behavior Contractors Meeting, San Antonio, USA (by invitation only), 2006
38. Winter Neutron School, Los Alamos National Laboratory, USA, 2005
39. Institute Laue-Langevin, France, 1997
40. Materials Department, University of California at Santa Barbara, Santa Barbara, California, 1996
41. May 1995, GE Aircraft Engines, Cincinnati, Ohio, 1995

SELECTED PUBLICATIONS (~340 in total)

To view the full list of publications, please click [HERE](#) or visit my [Google Scholar](#).

- [1] X. Y. Li, H. P. Zhang, S. Lan, D. L. Abernathy, C. H. Hu, L. R. Fan, M. Z. Li*, and **X.-L. Wang***, “Spatial correlation at the boson peak frequency in amorphous materials,” *Nature Communications*, **17**, 860 (2026).
- [2] Bojing Guo, Dingcong Cui, Qingfeng Wu, Yuemin Ma, Daixiu Wei, Kumara LS R, Yashan Zhang, Chenbo Xu, Zhijun Wang, Junjie Li, Xin Lin, Jincheng Wang, **Xun-Li Wang**, Feng He, “Segregation-dislocation self-organized structures ductilize a work-hardened medium entropy alloy,” *Nature Communications*, **16**, 1475 (2025).
- [3] L. Zhu, H. Y. He, M. Naeem, X. Sun, J. Qi, P. Liu, S. Harjo, K. Nakajima, B. Li*, and **X.-L. Wang***, “Antiferromagnetism and phase stability of CrMnFeCoNi high-entropy alloy,” *Physical Review Letters*, **133**, 126701 (2024).
- [4] G. L. Cai, Y. H. Li, Y. Fu, H. Yang, L. Mei, Z. Y. Nie, T. F. Li, H. Liu, Y. B. Ke, **X.-L. Wang**, J.-L. Brédas, M.-C. Tang, X. K. Chen, X. W. Zhan, X. H. Lu, “Deuteration-enhanced neutron contrasts to probe amorphous domain sizes in organic photovoltaic bulk heterojunction films,” *Nature Communications*, **15**, 2784 (2024)
- [5] X. Xia, T. K. Lau, X. Guo, Y. Li, M. Qin, K. Liu, Z. Chen, X. Z. Zhan, Y. Q. Xiao, P. F. Chan, H. Liu, L. H. Xu, G. L. Cai, N. Li, H. M. Zhu, G. Li, Y. Zhu, T. Zhu, X. W. Zhan, **X.-L. Wang**, X. H. Lu, “Uncovering the out-of-plane nanomorphology of organic photovoltaic bulk heterojunction by GTSAXS,” *Nature Communications*, **12**, 1-10 (2021).
- [6] S. Lan*, L. Zhu, Z. D. Wu, L. n Gu, Q. H. Zhang, H. H. Kong, J. Z. Liu, R. Y. Song, S. N. Liu, G. Sha, Y. G. Wang, Q. Liu, W. Liu, P. Y. Wang, C. T. Liu, Y. Ren*, and **X.-L. Wang***, “A medium-range structure motif linking amorphous and crystalline states,” *Nature Materials*, **20**, 1347–1352 (2021)
- [7] H.Y. He, M. Naeem, F. Zhang, Y.L. Zhao, S. Harjo, T. Kawasaki, B. Wang, X.L. Wu, S. Lan, Z.D. Wu, W. Yin, Y. Wu, Z.P. Lu, J.J. Kai, C.T. Liu, **X.-L. Wang***, “Stacking Fault Driven Phase Transformation in CrCoNi Medium Entropy Alloy”, *Nano Letters*, **21**, 3, 1419–1426 (2021)
- [8] X. Y. Li, H. P. Zhang, S. Lan, D. L. Abernathy, T. Otomo, F. W. Wang, Y. Ren, M. Z. Li*, and **X.-L. Wang***, “Observation of High-Frequency Transverse Phonons in Metallic Glasses”, *Physical Review Letters*, **124**, 225902 (2020).
- [9] M. Naeem, H. Y. He, F. Zhang, H. L. Huang, S. Harjo, T. Kawasaki, B. Wang, S. Lan, Z. D. Wu, F. Wang, Y. Wu, Z. P. Lu, Z. W. Zhang, C. T. Liu, and **X.-L. Wang***, “Cooperative deformation in high-entropy alloys at ultralow temperatures,” *Science Advances*, **6**, eaax4002 (2020).
This paper is featured in several news outlets, including
[Phys.org](#), “[Multi-stage deformation process in high-entropy alloys at ultra-low temperatures revealed](#)”
[Eureka!](#) “[Multi-stage deformation process in high-entropy alloys at ultra-low temperatures revealed](#)”

[Japan Proton Accelerator Complex Press Release \(in Japanese\)](#)
[極低温で現れる先進的合金の特異な変形メカニズムを解明](#)

- [10] X. Y. Li, P.-F. Liu, E. Y. Zhao, Z. G. Zhang, T. Guidi, M. Le, M. Avdeev, K. Ikeda, T. Otomo, M. Kofu, K. Nakajima, J. Chen, L. H. He, Y. Ren, **X.-L. Wang**, B. T. Wang, Z. F. Ren, H. Z. Zhao, and F. W. Wang, “Ultralow Thermal Conductivity from Transverse Acoustic Phonon Suppression in Distorted Crystalline α -MgAgSb,” *Nature Communications*, **11**, 1-9 (2020).
- [11] B. Wang, H. Y. He, M. Naeem, S. Lan, S. Harjo, T. Kawasaki, Y. X. Nie, H.W. Kui, T. Ungár, D. Ma, A. D Stoica, Q. Li, Y. Ke, C. T. Liu, and **X.-L. Wang***, “Deformation of CoCrFeNi high entropy alloy at large strain,” *Scripta Materialia*, **155**, 54-57 (2018).
- [12] S. Lan, Y. Ren, X. Y. Wei, B. Wang, E. P. Gilbert, T. Shibayama, S. Watanabe, M. Ohnuma, and **X.-L. Wang***, “Hidden Amorphous Phase and Reentrant Supercooled Liquid in Pd-Ni-P Metallic Glasses,” *Nature Communications* **8**, 14679 (2017); doi:10.1038/ncomms14679
(This work solved a 40-year old scientific mystery. The story was covered widely in news media in English, Japanese, and Chinese. Examples:
[ScienceDaily, “Atomic 're-packing' behind metallic glass mystery”](#)
[Phys.org, “Insights may lead to design and development of superior metallic alloys.”](#)
[Hokkaido University, “40年間謎とされてきたアモルファス合金の示差走査熱量測定における異常発熱の理由を中, 米, 豪, 日の4カ国共同で初めて解明”](#)
[NSFC, 我国青年学者发现非晶合金在晶化温度以下的多形性相变](#),
Also featured in [Nature Communications’ collection series, Metallurgy](#))
- [13] H. S. Chen*, and **X.-L. Wang***, “China's first pulsed neutron source,” *Nature Materials*, **15**, 689 – 691 (2016).
- [14] A. Pramanick, **X.-L. Wang***, A. D. Stoica, C. Yu, Y. Ren, S. Tang, and Z. Gai, “Kinetics of magnetoelastic twin boundary motion in ferromagnetic shape memory alloys,” *Physical Review Letters*, **112**, 217205 (2014).
- [15] S. Cheng, S. Y. Lee, C. Lei, L. Li, J. Almer, **X.-L. Wang**, Y. M. Wang, T. Ungar, P. K. Liaw, “Uncommon Deformation Mechanisms during Fatigue-Crack Propagation in Nanocrystalline Alloys,” *Physical Review Letters*, **110**, 135501 (2013).
- [16] Y. Wu, D. Q. Zhou, W. L. Song, H. Wang, Z.Y. Zhang, D. Ma, **X. L. Wang**, and Z. P. Lu, “Ductilizing Bulk Metallic Glass Composite by Tailoring Stacking Fault Energy,” *Physical Review Letters*, **109**, 245506 (2012).
- [17] D. Ma, A. D. Stoica, **X.-L. Wang***, Z. P. Lu, B. Clausen, D. W. Brown, “Moduli inheritance and the weakest link in metallic glasses,” *Physical Review Letters*, **108**, 085501 (2012)
(covered by [News and Views, Nature Materials](#), **11**, 275–276 (2012))
- [18] **X.-L. Wang***, K. An, L. Cai, Z. Feng, S. E. Nagler, C. Daniels, K. J. Rhodes, D. L. Wood, III., A. D. Stoica, H. D. Skorpenske, C. Liang, W. Zhang, Y. Kim, Y. Qi, and S. J. Harris, “Visualizing the chemistry and structure dynamics in Li-ion batteries by in-situ neutron diffraction,” *Scientific Report*, **2**, 747 (2012).
- [19] I. Robertson, C. Schuh, J. Vetrano, N. Browning, D. Field, D. Juul-Jensen, M. Miller, I. Baker, D. Dunand, R. Dunin-Borkowski, B. Kabius, T. Kelly, S. Lorano-Perez, A. Misra, G. Rohrer, T. Rollett, M. Taheri, G. Thomson, M. Uchic, **X.-L. Wang**, G. Was, “Towards an integrated materials characterization toolbox,” a viewpoint paper in *Journal of Materials Research*, **26**, 1341-1383 (2011).
- [20] Z. W. Zhang, C. T. Liu, **X.-L. Wang***, K. C. Littrell, M. K. Miller, K. An, and B. A. Chin, “From embryos to precipitates: a study of nucleation and growth in a multicomponent ferritic steel,” *Physical Review B*, **84**, 174114 (2011).
- [21] S. Cheng, Y. Zhao, Y. Wang, Y. Li, **X.-L. Wang**, P. K. Liaw, and E. J. Lavernia, “Structure modulation in nanocrystalline NiFe driven by cyclic deformation,” *Physical Review Letters*, **104**, 255501 (2010).
- [22] S. Cheng, Y. Zhao, Q. Wei, **X.-L. Wang**, Y. Ren, P. K. Liaw, H. Choo, and E. J. Lavernia, “Substantial Deformation of Nanocrystalline NiFe Alloy under Dynamic Loading,” *Advanced Materials*, **21**, 5001–5004 (2009).

- [23] S. Cheng, A.D. Stoica, **X.-L. Wang***, Y. Ren, J. Almer, J.A. Horton, C.T. Liu, B. Clausen, D.W. Brown, P.K. Liaw, and L. Zuo, "Deformation cross-over: from nano to meso scales," *Physical Review Letters*, **103**, 035502 (2009).
(selected for inclusion in August 3 issue of Virtual Journal of Nanoscale Science & Technology)
- [24] D. Ma, A. D. Stoica, and **X.-L. Wang***, "Power-law scaling and fractal nature of the medium range order in metallic glasses," *Nature Materials*, **8**, 30-34 (2009).
- [25] L. Yang, M. K. Miller, **X.-L. Wang***, C. T. Liu, A. D. Stoica, D. Ma, J. Almer, and D. Shi, "Nano-scale solute partitioning in devitrified bulk metallic glass," *Advanced Materials*, **21**, 305-308 (2009)
(featured on the cover).
- [26] C. T. Liu, C. L. Fu, M. F. Chrisholm, and J. R. Thompson, Kremer, and **X.-L. Wang**, "Magnetism and solid solution effects in NiAl (40%Al) alloys," *Progress in Materials Science*, **52**, 352-370 (2007).
- [27] **X.-L. Wang**, "Application of neutron diffraction to engineering problems," *JOM*, March, 53-58 (2006).
- [28] **X.-L. Wang***, T. M. Holden, G. Q. Rennich, A. D. Stoica, P. K. Liaw, H. Choo, and C. R. Hubbard, "VULCAN – The Engineering Diffractometer at the SNS," *Physica B*, **385-386**, 673-675 (2006).
- [29] **X.-L. Wang***, J. Almer, Y. D. Wang, J. K. Zhao, C. T. Liu, A. D. Stoica, D R. Haeffner, and W. H. Wang, "In-situ Synchrotron Study of Phase Transformation Behaviors in Bulk Metallic Glass Using Simultaneous X-ray Diffraction and Small Angle Scattering," *Physical Review Letters*, **91**, 265501 (2003).
- [30] Y.D. Wang*, H. Tian, A. D. Stoica, **X.-L. Wang***, P. K. Liaw, and J.W. Richardson, "Development of Large Grain-Orientation-Dependent Residual Stresses in a Cyclically-Deformed Alloy," *Nature Materials*, **2**, 103-106 (2003).
(covered by Materials Today, http://www.materialstoday.com/pdfs_6_3/research.pdf)
- [31] W.-T. Lee and **X.-L. Wang**, "IDEAS, a General-purpose Computer Program for Simulation of Neutron Scattering Instruments," *Neutron News*, **13** (No. 4), 30-34 (2002).
- [32] **X.-L. Wang**, "Conceptual Design of the SNS Engineering Diffractometer", SNS Report No. IS-1.1.8.2-6035-RE-A-00 (2000).
- [33] Z. Wang, **X.-L. Wang**, J. A. Fernandez-Baca, D. C. Johnston, and D. Vaknin, "Antiferromagnetic Ordering and Paramagnetic Behavior of Ferromagnetic Clusters in BaCuO_{2+x}," *Science*, **264**, 402-404 (1994).
- [34] L. L. Miller, **X. L. Wang**, S. X. Wang, C. Stassis, D. C. Johnston, J. Faber Jr., and C.-K. Loong, "Synthesis, Structure and Properties of Sr₂CuO₂Cl₂," *Physical Review B*, **41**, 1921 (1990).
- [35] 王循理, 黄孝培, "绝热磁化致冷的可能性", 《大学物理》1, 15-15 (1986)
(A paper by two undergraduate students)